

## PATENT ABSTRACTS OF JAPAN

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### **(54) RECORDING AND REPRODUCING DEVICE FOR TELEVISION BROADCAST SIGNAL**

(57)Abstract:

**PROBLEM TO BE SOLVED:** To conduct an operation of skipping a commercial (CM) by one operation of the user.

**SOLUTION:** When the user depresses a CM skip key from a mechanism 2 of the recording and reproducing device while a television signal is reproduced the VTR is set to the fast feed reproduction mode and a black frame detection section 7 detects a black frame included in the reproduced television signal and when the detection section 7 detects black frames included in the CM and the program text the usual reproduction is started from the detecting point of time.

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### **CLAIMS**

[Claim(s)]

[Claim 1] It is a recording and reproducing device of a television broadcasting signal characterized by comprising the following While said control means makes said record reproduction means in fast-forwarding-reproduction mode for Masakata by 1st operation of a user of said operation key at the time of said television broadcasting signal reproduction a case where it is judged that it is the 1st event that has the width beyond the 1st predetermined time that supervised an event detection signal from said event

detecting means and to which said event was set beforehand -- this -- a recording and reproducing device of a television broadcasting signal which was made to perform ordinary reproduction automatically from an event detection point in time of \*\* a 1st. A record reproduction means which reproduces a television broadcasting signal which recorded a television broadcasting signal on a recording medium and was recorded on the recording medium.

An event detecting means which detects an event contained in a television broadcasting signal reproduced by said record reproduction means from a recording medium.

A final controlling element which has an operation key which a user operates.

A control means which controls said record reproduction means in response to a keystroke of a user from said final controlling element.

[Claim 2] A recording and reproducing device of a television broadcasting signal performing ordinary reproduction automatically [ when it becomes in claim 1 beyond fixed time when duration time in said fast-forwarding-reproduction mode for Masakata was defined beforehand ].

[Claim 3] When the 2nd event that has the width beyond the 2nd predetermined time shorter than width beyond the 1st [ of said 1st event ] predetermined time in said fast-forwarding-reproduction mode for Masakata is detected in claim 1 A recording and reproducing device of a television broadcasting signal characterized by the bottom so that ordinary reproduction may be performed automatically after returning in inversion fast-forwarding-reproduction mode to a detection position of the 2nd event detected at the end.

[Claim 4] A recording and reproducing device of a television broadcasting signal replacing with inversion fast-forwarding-reproduction mode an event detection signal generation time of \*\* the 2nd detected by said last in claim 3 returning a playback position and being carried out by rewinding mode.

[Claim 5] A recording and reproducing device of a television broadcasting signal replacing with inversion fast-forwarding-reproduction mode an event detection signal generation time of \*\* the 2nd detected by said last in claim 3 returning a playback position and being carried out by playback position skip mode.

[Claim 6] A record reproduction means which reproduces a television broadcasting signal which recorded a television broadcasting signal on a recording medium and was recorded on the recording medium.

An event detecting means which detects an event contained in a television broadcasting signal reproduced by said record reproduction means from a recording medium.

A final controlling element which has an operation key which a user operates.

A control means which controls said record reproduction means in response to a keystroke of a user from said final controlling element.

While it is a recording and reproducing device of a television broadcasting signal provided with the above and said control means makes said record reproduction means in fast-forwarding-reproduction mode for Masakata by 1st operation of a user of said operation key at the time of said television broadcasting signal reproduction When it is judged that it is the 1st event that has the time beyond the 1st predetermined time that supervised an event detection signal from said event detecting means and to which said event was set beforehand this -- it is made as [ perform / automatically / from an event detection point in time of \*\* a 1st / ordinary reproduction ] and by predetermined key

operation of a user after fast-forwarding-reproduction mode transition for Masakata said 1st predetermined time is made as change is possible

[Claim 7] A key operated in claim 6 by predetermined key operation of a user after fast-forwarding-reproduction mode transition for Masakata They are either the REW (rewinding) key, the STOP (stop) key or the PLAY (reproduction) key. A recording and reproducing device of a television broadcasting signal when either of these keys is operated or duration time in fast-forwarding-reproduction mode exceeds fixed time wherein only predetermined time makes said 1st predetermined time small.

[Claim 8] When a user performs 1st operation of an operation key again in fixed time defined beforehand after shifting to ordinary reproduction in claim 6 and it shifts to fast-forwarding-reproduction mode for Masakata A recording and reproducing device of a television broadcasting signal wherein only predetermined time enlarges said 1st predetermined time.

[Claim 9] A recording and reproducing device of a television broadcasting signal characterized by said event being a black frame which exists in a television broadcasting signal in claims 13 and 6.

[Claim 10] A recording and reproducing device of a television broadcasting signal characterized by said event being a blue frame which exists in a television broadcasting signal in claims 13 and 6.

[Claim 11] A recording and reproducing device of a television broadcasting signal characterized by said event being a gray frame which exists in a television broadcasting signal in claim 1.

[Claim 12] A recording and reproducing device of a television broadcasting signal detecting an event when a black frame to which said event detecting means exists in a television broadcasting signal and an audio signal level at that time are below a predetermined value in claim 1.

[Claim 13] It is a videotape recorder characterized by comprising the following. While said control means makes said record reproduction means in fast-forwarding-reproduction mode for Masakata by 1st operation of a user of said operation key at the time of said television broadcasting signal reproduction. A black frame detection signal from said black frame detection means is supervised. A case where said black frame detection signal is judged that said black frame is the 1st black frame that has the width beyond the 1st predetermined time set up beforehand -- this -- a videotape recorder which was made to perform ordinary reproduction automatically from a black frame detection point in time of \*\* a 1st.

A record reproduction means which plays a television broadcasting signal which recorded a television broadcasting signal on videotape and was recorded on the videotape. A black frame detection means to detect a black frame contained in a television broadcasting signal played by said record reproduction means from videotape.

A remote control unit containing a CM skip key which a user operates which carries out an operation key owner.

A microcomputer which controls said record reproduction means in response to said keystroke of a user from said remote control unit.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the recording and reproducing device of television broadcastingsuch as a videotape recorder (VTR).

[0002]

[Description of the Prior Art] In what is called time shifting use of VTR with which the user viewed and listened to the recorded contents of broadcast after that at convenient time and which once records television broadcasting with VTRCM (commercials) broadcast in the middle of a program is a portion which a user does not need to look at essentially.

[0003] Therefore although a user will flyview and listen to this CM partconventionallythe user set VTR as fast-forwarding-reproduction modewhen CM startedin order to flyview and listen to this CM (a CM skip is carried out)and after CM was completedhe was performing two operations of returning VTR to ordinary reproduction mode.

[0004]

[Problem(s) to be Solved by the Invention] However since operation returned to ordinary reproduction is performed and a tape is fast forwarded also between that check after checking that CM is completed by the method of the above CM skipsas a resultthe contents of the program just behind CM cannot see. Therefore although it can view and listen by a user's setting VTR as reverse reproduction mode in order to amend past [ of this tape / progress ]and searching the head of a programwhat stops a tape in the position immediately after the end of CM correctly by a rapid traverse or rewinding reproduction is difficult.

[0005] After the period of CM equivalent-fast forwards for 30 seconds by one operation paying attention to being 30 second bits in principlethere is VTR which carries the CM skip function it was made to be in a reproduction state automaticallybut. Usuallyin order to correspond to a certain CM about 2 minuteswhen there is CM which needed to perform operation 4 times and also shifted from principlenessuch as 10 seconds and 15 secondsit cannot respond.

[0006] It uses that the sound is usually broadcast by two languages as for the foreign film and CM is broadcast in the stereo in JapanWhat [ it makes with a record pause at the time of the pilot signal non detection of two language broadcastand CM was made not to be recorded on ] Although there is VTR which carries out marking of the CM period to a tape based on the pilot signal non detection of said two-language broadcast at the time of recordingand fast forwarded the CM period based on this marking at the time of playbackBy the method of using these voice multiple signalthe program which can respond will be limited and there is a problem that this method in particular is hardly unutilizable overseas.

[0007] Therefore an object of this invention tends to be to solve this faultand it tends to provide a suitable CM skip device to the broadcast voice of the U.S. or Europe especially.

[0008]

[Means for Solving the Problem] A record reproduction means which reproduces a television broadcasting signal which the invention according to claim 1 recorded a

television broadcasting signal on a recording medium and was recorded on the recording medium. An event detecting means which detects an event contained in a television broadcasting signal reproduced by said record reproduction means from a recording medium. It is a recording and reproducing device of a television broadcasting signal provided with a final controlling element which has an operation key which a user operates and a control means which controls said record reproduction means in response to a keystroke of a user from said final controlling element. While said control means makes said record reproduction means in fast-forwarding-reproduction mode for Masakata by 1st operation of a user of said operation key at the time of said television broadcasting signal reproduction. When it is judged that it is the 1st event that has the width beyond the 1st predetermined time that supervised an event detection signal from said event detecting means and to which said event was set beforehand, this -- it is a recording and reproducing device of a television broadcasting signal which was made to perform ordinary reproduction automatically from an event detection point in time of \*\* a 1st.

[0009] The invention according to claim 2 was made to perform ordinary reproduction automatically when duration time in said fast-forwarding-reproduction mode for Masakata became beyond fixed time defined beforehand.

[0010] When the 2nd event in which the invention according to claim 3 has the width beyond the 2nd predetermined time shorter than width beyond the 1st [ of said 1st event ] predetermined time in said fast-forwarding-reproduction mode for Masakata is detected. After returning in inversion fast-forwarding-reproduction mode to a detection position of the 2nd event detected at the end it is characterized by the bottom so that ordinary reproduction may be performed automatically.

[0011] An event detection signal generation time of \*\* the 2nd detected by said last is replaced with inversion fast-forwarding-reproduction mode returning a playback position and the invention according to claim 4 is performed by rewinding mode.

[0012] An event detection signal generation time of \*\* the 2nd detected by said last is replaced with inversion fast-forwarding-reproduction mode returning a playback position and the invention according to claim 5 is performed by playback position skip mode.

[0013] A record reproduction means which reproduces a television broadcasting signal which the invention according to claim 6 recorded a television broadcasting signal on a recording medium and was recorded on the recording medium. An event detecting means which detects an event contained in a television broadcasting signal reproduced by said record reproduction means from a recording medium. It is a recording and reproducing device of a television broadcasting signal provided with a final controlling element which has an operation key which a user operates and a control means which controls said record reproduction means in response to a keystroke of a user from said final controlling element. While said control means makes said record reproduction means in fast-forwarding-reproduction mode for Masakata by 1st operation of a user of said operation key at the time of said television broadcasting signal reproduction. When it is judged that it is the 1st event that has the time beyond the 1st predetermined time that supervised an event detection signal from said event detecting means and to which said event was set beforehand, this -- it is made as [ perform / automatically / from an event detection point in time of \*\* a 1st / ordinary reproduction ] and by predetermined key operation of a user

after fast-forwarding-reproduction mode transition for Masakatasaid 1st predetermined time is made as change is possible

[0014]A key from which the invention according to claim 7 is operated in claim 6 by predetermined key operation of a user after fast-forwarding-reproduction mode transition for MasakataWhen it is either the REW (rewinding) keythe STOP (stop) key or the PLAY (reproduction) key and either of these keys was operatedonly predetermined time was made to make said 1st predetermined time small.

[0015]When a user shifts an operation key to fast-forwarding-reproduction mode for Masakata by performing 1st operation again in fixed time defined beforehand after shifting to ordinary reproduction in claim 6the invention according to claim 8A recording and reproducing device of a television broadcasting signalwherein only predetermined time enlarges said 1st predetermined time.

[0016]The invention according to claim 9 is characterized by said event being a black frame which exists in a television broadcasting signal.

[0017]The invention according to claim 10 is characterized by said event being a blue flame which exists in a television broadcasting signal.

[0018]The invention according to claim 11 is characterized by said event being a gray frame which exists in a television broadcasting signal.

[0019]The invention according to claim 12 detects an eventwhen a black frame to which said event detecting means exists in a television broadcasting signaland an audio signal level at that time are below a predetermined value.

[0020]A record reproduction means which plays a television broadcasting signal which the invention according to claim 13 recorded a television broadcasting signal on videotapeand was recorded on the videotapeA black frame detection means to detect a black frame contained in a television broadcasting signal played by said record reproduction means from videotapeA remote control unit containing a CM skip key which a user operates which carries out an operation key ownerIt is the videotape recorder provided with a microcomputer which controls said record reproduction means in response to said keystroke of a user from said remote control unitWhile said control means makes said record reproduction means in fast-forwarding-reproduction mode for Masakata by 1st operation of a user of said operation key at the time of said television broadcasting signal reproductionA black frame detection signal from said black frame detection means is superviseda case where said black frame detection signal is judged that said black frame is the 1st black frame that has the width beyond the 1st predetermined time set up beforehand -- this -- it is the videotape recorder which was made to perform ordinary reproduction automatically from a black frame detection point in time of \*\* a 1st.

[0021]

[Embodiment of the Invention]Hereafterthe example of this invention is describedreferring to drawings.

[0022]Drawing 1 shows the important section block diagram of VTR which carried out this inventionand the video signal obtained from a tuner is changed into the signal which the video signal processing section 1 was suppliedand the modulation process etc. were performed thereand was suitable for recordand is recorded on magnetic tape (videotape) via the mechanism 2. In control of this recorda user transmits operation information to operation / indicator 5 using the remote control 6By giving the instructions from the user

to the control section 4 which consists of microcomputers (microcomputer) in response to the remote control signal the microcomputer 4 controls the mechanism 2 and operation / indicator 5 records the video signal from the above-mentioned video signal processing section 1. The audio signal similarly acquired from a tuner is changed into the signal which the voice signal processing section 3 was supplied and the modulation process etc. were performed there and was suitable for record and is recorded on magnetic tape via the mechanism 2.

[0023] If the instructions which a user operates the remote control 6 and sets as operation / indicator 5 on the other hand at reproduction mode are sent a microcomputer will play the image and audio signal which 4 controlled the mechanism 2 and were recorded on magnetic tape. After the video signal processing section 1 is supplied and recovery processing etc. are performed there the video signal reproduced from the mechanism 2 is supplied also to the black frame detection part 7 while it is outputted to a television receiver as a reproduced video signal. This black frame detection part 7 detects the black frame contained in a video signal and supplies that detection result to the microcomputer 4.

[0024] A black frame is a black picture which exists between especially the volumes between CM and CMs CM and on program book in U.S. broadcast and this black picture has a number field \*\*\*\* case and a case where about tens of fields continue. The concrete example of a component circuit of this black frame detection part is shown in drawing 2.

[0025] If explanation of this black frame detection circuit of operation is explained briefly the inputted video signal will be amplified by Q1-Q3 and the DC voltage at the tip of a synchronized signal will be clamped in the clamp circuit of C2 and Q4. The clamped signal is changed into the DC voltage to which the low pass filter could be applied by Q5 and C4 and which is proportional to AC level. If this DC voltage is compared with the DC voltage set up by the operational amplifier of COM1 R11 and R20 and its input voltage is higher than a programmed voltage (at the time with a video signal) -- output "H" -- it will become an output "L" if low (at namely the time of a black frame).

[0026] After the voice signal processing section 3 is supplied and recovery processing etc. are performed there the audio signal reproduced from the mechanism 2 is supplied also to the silence detection part 8 while it is outputted to a television receiver as a reproduced sound signal. This soundless part primary detecting element 8 detects the silent period in an audio signal and supplies between that patent period to the microcomputer 4. Drawing 3 is a concrete example of a component circuit of a silence detection part.

[0027] If operation of this silence detection part is explained simply it will be amplified by COM2 and will be rectified by D3 D4 and C7 and the inputted audio signal will serve as DC voltage proportional to a voice inputting level. If this DC voltage is compared with the voltage set up by R17 and R18 in COM3 and an input signal applies in quantity (at the time of an owner sound) -- "H" -- "L" will be outputted if it kicks low (at the time of silent).

[0028] drawing 4 is a key arrangement figure of the remote control transmitter 6 -- 6A -- as for the rise down key for volume setting out and 6Ca rapid-traverse key and 6G are stop keys a reproduction key and 6F and 6D of the rise down key for channel selections and 6B is [ a power key and 6E / a rewinding key and 6H ] a CM skip key.

[0029] Next the CM skip operation with VTR concerning the 1st example of this invention is explained referring to the explanatory view of drawing 5 and the flow chart of drawing 6.

[0030] While the user is viewing and listening to the television program which changed VTR into the ordinary reproduction state (S1) and was recorded now suppose that CM started in the middle of the program. If it does so a user will press the CM skip key 6D of the remote control 6 once (S2). When the CM skip key 6D is pressed the microcomputer 4 makes VTR shift to fast-forwarding-reproduction mode (CUE mode) (S3).

[0031] That is supposing CM presupposes that there were three (CMs 1-3) between the volumes volume on program book and on program book like drawing 5 now and the CM skip key is pressed while being CM1 of the beginning VTR will become CUE mode from this time. Next although detection of whether there is any black frame (BF) of the 1st width at Step 4 (S4) is performed if the black frame of the 1st width (T1) is detected it will shift to ordinary reproduction mode (S12).

[0032] If it is judged at Step 4 that there is no black frame more than the 1st width detection of whether next there is any black frame more than the 2nd width (T2) at Step 5 will be performed but. If the black frame more than the 2nd width is detected at Step 5 the position of the black frame more than the 2nd detected width will be memorized in the memory of a microcomputer.

[0033] Time until the 2nd black frame is detected at this time is judged at Step 7 If it is judged that the 2nd black frame is not detected beyond as for a prescribed period (for example time of 30 seconds) and it is not detected [ judgment whether the black frame more than the 2nd width was detected until now is made and ] at the following step 8 it shifts to reproduction mode as it is. If it is judged that the black frame more than the 2nd width was detected at Step 8 It becomes inversion fast-forwarding-reproduction mode (S9) and if it is judged at Step 10 that the tape was rewound to the detection position of the black frame detected at the end ordinary reproduction will begin from the position.

[0034] In broadcast with actual operation of Step 4 - Step 12 more than the 1st width (T1) (50 field) the width of the black frame which exists between the volumes CM and on program book at the time of the shift to CM from the volume on program book or the shift from CM to the volume on program book \*\*\*\* If the black frame of the 1st width is detected using more than the 2nd width (T2) (5 field) having many a certain cases as for the width of the black frame which exists between CMs since a subsequent image is a volume on program book ordinary reproduction of it is carried out. And when the black frame of the 1st width is not detected exceptionally it judges that the black frame detection time of the 2nd width detected at the end or later is a volume on program book and ordinary reproduction is carried out.

[0035] Although black frame B-2 is first detected in the case where the CM skip key is pressed to timing like drawing 5 Since this black frame B-2 is the 2nd width (T2) that position (t2+T2) is memorized but since the black frame B3 detected next is also the 2nd width (T2) this position (t3+T2) is memorized. It is not necessary to say that the time between this time (t2+T2) and t3 and the time between (t3+T2) and t4 are values smaller than the default value measured at Step 7.

[0036] And although black frame B4 is finally detected since this black frame has the 1st width (T1) if this black frame B4 is detected the volume on program book will be reproduced by ordinary reproduction mode from that end time of a black frame (t5).

[0037] Therefore the user can fly a series of CM groups automatically by one operation after CM start and as a result it can view [ since reproduction is resumed from the time of t5 / the volume on book after the end of CM group ] as a result and listen to a program



flatly.

[0038] Although it is inversion fast-forwarding-reproduction mode at Step 9 in the above-mentioned example after rewinding a tape to the black frame which was replaced with this mode and detected at the end by rewinding mode it is also controllable to start playback.

[0039] By the way in the above-mentioned example time (default value) i.e. a threshold to detect the width of a black frame is fixed. However the following problems arise that the threshold of a black frame is immobilization in this way.

[0040] That is if the short black frame which is between CMs when the threshold for black frame detection is small to the period of the black frame (and soundless part) which should be detected is detected originally the place which must still be fast-forwarding-reproduction mode will shift to ordinary reproduction. For this reason in order to skip CM CM skip key must be operated again.

[0041] Contrary to this to the period of the black frame (and soundless part) which should be detected if the threshold for black frame detection is large if the long black frame between CM and this editing is detected originally the place which shifts to ordinary reproduction mode from fast-forwarding-reproduction mode will be maintained with fast-forwarding-reproduction mode and will not shift to ordinary reproduction mode. For this reason since it is in a fast-forwarding-reproduction state even if it goes into the volume on program book the inconvenience that a skip state must be canceled compulsorily produces CM by key operations such as the PLAY key.

[0042] Therefore in the 2nd example the threshold for black frame detection is made variable that such inconvenience should be avoided. And the threshold for detection of a black frame should carry out whether a user should make it large or can be considered that a user operates it since judgment is difficult and is made to adjust the threshold of a black frame automatically supposing a \*\*\*\* key.

[0043] Specifically operation indicated to the flow chart of drawing 7 is performed.

[0044] If CM skip key is operated (S1) will shift to CM skip mode but (S2) (the flag of CM skip mode stands). If one keystroke of "REW (rewinding)" by a user STOP and "PLAY" is in this CM skip (S3) it will shift to the operation according to (S4)(S5) and it.

[0045] Namely when there is operation of the "REW" key REV (rapid-traverse reverse reproduction) (S12) If operation of the "PLAY" key has stop operation (S13) when there is operation of the "STOP" key ordinary reproduction operation (S14) will be performed and only the specified quantity will make the threshold of black frame detection small after that (S15).

[0046] Thus the reason for making the threshold of black frame detection small is because it is thought that the long black frame between CM and this editing was not able to be detected since the threshold of the black frame set up beforehand was too large.

[0047] After the threshold of black frame detection is made small at Step 15 CM skip mode is canceled at Step 16 (the flag of CM skip mode is canceled).

[0048] In a CM skip the limit timer (if a linear time counter advances for 10 minutes after detecting a black frame and a soundless part finally a limit timer will work) in a microcomputer When it works it shifts to (S6) and ordinary reproduction mode (S14) and the threshold of reproduction black frame detection is made small (S16). Thus the reason for making the threshold of black frame detection small is because it is thought that the long black frame between CM and this editing was not able to be detected since the threshold of the black frame beforehand set up like the above was too large. After the

threshold of black frame detection is made small at Step 15CM skip mode is canceled at Step 16 (CM skip flag is canceled). A limit timer is equivalent to operation of Step 6 (S6) of drawing 6 if it says in the 1st example.

[0049]When the black frame period which it was not generated by the limit timer (S6)but exceeded the threshold of the black frame is detected(S7)Although CM skip mode is canceled and it shifts to reproduction mode (S8)after CM skip operation finish within 5 secondsWhen CM skip key is operated so that a user may make it shift to CM skip operation againit shifts to (S9) and CM skip mode (S10)and the threshold of a black frame is enlarged (S11).

[0050]Thusthe reason for enlarging the threshold of a black frameSince the threshold of the black frame set up beforehand was too smallbefore detecting the long black frame and soundless part which exist between the volumes on CM and bookit is because it is thought that the black frame and soundless part with a short period between CMs were detectedand it shifted to ordinary reproduction.

[0051]Nexta concrete example is explainedreferring to drawing 8. Drawing 8 is a figure showing the recorded state of the videotape which recorded broadcastand as for "this editing"the volume on program bookand "CM1CM2CM3" are commercial partsrespectively. The concrete numerical value of the black frame period indicated below and the threshold of a black frame is a value at the time of ordinary reproduction.

[0052]That isBF1 is a black frame between this editing and CM1and the period is 350 ms. "BF2" is a black frame between CM1 and CM2and the period is 100 ms. "BF3" is a black frame between CM2 and CM3and the period is 150 ms. "BF4" is a black frame between the volumes CM3 and on program bookand the period is 600 ms.

[0053]Usuallywhen reproduction drawing is set to CM1it is recognized as CM having startedand tries to fly CMthe CM skip key is pressedand VTR is made to shift to CUE mode during tape reproductionwhen a user performs CM skip operation. At this timethe following case where (b) - (\*\*) becomes arises with the value of the threshold of the set-up black frame.

[0054](\*\*) Since the threshold of the black frame is black frame threshold (25 ms) <BF2 (100 ms) supposing it was set as 25 msit will shift to reproduction in the beginning of CM2.

[0055](\*\*) Since the threshold of the black frame is black frame threshold (125 ms) <BF3 (150 ms) supposing it was set as 75 msit will shift to reproduction in the beginning of CM3.

[0056](\*\*) Since the threshold of the black frame is black frame threshold (250 ms) <BF4 (600 ms) supposing it was set as 250 msit is reproduced by the right beginning of this editing.

[0057](\*\*) Since it is threshold (750 ms) >BF4 (600 ms) of a black frame supposing the threshold of the black frame was set as 750 msbeginning of this editing cannot be detected but it becomes reproduction mode by a limit timer.

[0058]Thereforeaccording to a previous operation flow chartin being (b) and (\*\*). Subsequent CM skip operation can be made to perform correctly by making the threshold of a black frame small by enlarging the threshold of a black framein nothing and the case of (\*\*) so that subsequent CM skip operation may be made to perform correctly.

[0059]In the time of microcomputer reset (power up of VTR) at this exampleWhenever the threshold of the black frame is set as 835 ms which is a center value and it goes

through Step 11 from this value a threshold is made to increase 83.5 ms and whenever it goes through Step 15a threshold is made to decrease for 83.5 ms.

[0060] In the above-mentioned example when it carries out on VTR explain per but. For example in the case of the video disk device etc. which use the recording medium in which random access is possible it can skip to the position of the black frame which was replaced with the inversion fast-forwarding-reproduction mode of Step 9 of drawing 6 and was detected at the end.

[0061] At the time of fast forwarding reproduction at the time at the time of inversion fast forwarding reproduction or rewinding the video output obtained from VTR cannot be used as a reproduction screen or EE screen but it can be made the screen of mute or blaubok.

[0062] Although he is trying to detect a black frame in the above-mentioned example so that the broadcast voice in the U.S. may be suited in order to be able to apply this invention also by the broadcast voice in Europe it replaces with this black frame and it is constituted so that a blue flame or a gray frame may be detected.

[0063] Although only existence of a black frame is detected and the CM skip is performed in the above-mentioned example it may be made to detect the time of an audio signal being below a constant level as an originating point of an event with the surveillance of a video signal.

[0064]

[Effect of the Invention] Since the user can make the CM part at the time of reproduction skip by one key operation according to this invention it is very convenient.

[0065] Since beginning edited by a program book is detected using the difference between the length of the black frame which exists between CMs and the length of the black frame which exists between the volumes on CM and program book a CM skip is realizable by a very easy method.

[0066] Since the threshold of the black frame which detects the period of a black frame is made variable a malfunction of a CM skip can be lessened as much as possible.

[0067] Since the threshold of the black frame is made small when the key in which a user is likely to do normal operation is operated as a means to change the threshold of a black frame automation of change of the threshold of a black frame can be attained.

[0068] When the event detection signal generation time detected at the end returns a playback position it can check beginning from the program start time just behind CM by being made to be carried out by inversion fast-forwarding-reproduction mode.

[0069] When the event detection signal generation time detected at the end is made to be performed to return a playback position by rewinding mode search of the program start time just behind CM can be made quick.

[0070] When the event detection signal generation time detected at the end is made to be performed to return a playback position by the playback position skip mode search of the program start time just behind CM can be made still quicker.

[0071] At the time of fast forwarding reproduction by making a reproducing output become mute or a blaubok screen even if it does not see the unsightly screen by fast forwarding reproduction it can be managed.

[0072] A CM skip can be carried out by a method suitable for U.S. broadcast voice by using an event as the black frame which exists in a television broadcasting signal.

[0073] A CM skip can be carried out by a method suitable for European broadcast voice

by using an event as the blue frame or gray frame which exists in a television broadcasting signal.

[0074]When the audio signal level at that time is below a predetermined value a CM skip can be certainly carried out to the black frame to which an event detecting means exists in a television broadcasting signal by making it output an event detection signal.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1]It is a block diagram of VTR which carried out this invention.

[Drawing 2]It is a black frame detection circuit diagram carried out by this invention.

[Drawing 3]It is a silence detection circuit diagram carried out by this invention.

[Drawing 4]It is a figure of the remote control transmitter used by this invention.

[Drawing 5]It is a figure showing the time chart for explanation of VTR of this invention of operation.

[Drawing 6]It is a figure showing the flow chart for explanation of VTR of this invention of operation.

[Drawing 7]It is a figure showing the flow chart for explanation of VTR concerning the 2nd example of this invention of operation.

[Drawing 8]It is a figure for explanation of VTR of this invention of operation.

[Description of Notations]

- 1 Video signal processing circuit
  - 2 Mechanism
  - 3 Sound signal processing circuit
  - 4 Microcomputer
  - 5 Operation/indicator
  - 6 Remote control transmitter
  - 7 Black frame detection part
  - 8 Silence detection part
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